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(54) PRINTING MANAGEMENT SYSTEM FOR MANAGING PRINTING LOG, METHOD FOR MANAGING  
PRINTING AND COMPUTER PROGRAM

(57)Abstract:

PROBLEM TO BE SOLVED: To accurately manage printing logs.

SOLUTION: A managing server 50 receives a printing log from a client 20 in each output of a printing job and receives MIB(management information base) data for plural (or one) stored printing jobs from a network printer 40 at each prescribed time (30 sec). The server 50 generates a printing log file(PLF) by merging the printing log obtained from the client 20 and printing result information generated from the MIB data obtained from the network printer 40. Especially when an item of the same sort as the printing log is included in the printing result information, the PLF is generated by preferentially adopting the printing result information.

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CLAIMS

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## [Claim(s)]

[Claim 1] It is the printing managerial system which manages the printing log about the print job concerned when printing a print job from the computer apparatus of 1 to printer equipment with other computer apparatus. A printing log generation means by which said computer apparatus of 1 generates the printing log about said print job, It has a printing log transmitting means to transmit said generated printing log to a computer apparatus besides the above. Said printer equipment It has a status information are recording means to accumulate the status information about printing of said print job performed with the printer equipment concerned. A computer apparatus besides the above A printing log receiving means to receive the printing log sent from said computer apparatus of 1, A printing managerial system equipped with a merge means to merge a status information acquisition means to acquire status information from the status information are recording means of said printer equipment, and the printing log which received with said printing log receiving means and the status information acquired with said status information acquisition means, and to generate the printing log for management.

[Claim 2] Said merge means is a printing managerial system equipped with a matching means to aim at a response with said printing log and status information by using said job identification information as a key, including the job identification information from which it is a printing managerial system according to claim 1, and said both printing logs and status information discriminate said print job.

[Claim 3] Said merge means is a printing managerial system equipped with the data rewriting means which rewrites the content of said printing log based on said status information about the same kind concerned of data item when it is a printing managerial system according to claim 1 or 2 and the data item of the same kind exists in said printing log and status information.

[Claim 4] The printing managerial system according to claim 1 to 3 characterized by providing the following A computer apparatus besides the above is an acquisition error detection means to detect that the error occurred in acquisition of the status information by said status information acquisition means. An error-processing means to determine the printing log which forbade activation of said merge means and received with said printing log receiving means when generating of said error was detected by said acquisition error detection means as the log for management

[Claim 5] It is a printing managerial system according to claim 1 to 4. The printing log transmitting means of said computer apparatus of 1 Whenever it creates one print job for said printer equipments, it is the configuration of transmitting the printing log about the print job concerned of 1. The printing log receiving means of a computer apparatus besides the above It is the printing managerial system which is the configuration that are the configuration of receiving said printing log to the timing to which a printing log is sent from said printing log transmitting means, and the status information acquisition means of a computer apparatus besides the above acquires said status information in order for every predetermined time per print job.

[Claim 6] The printing managerial system which is a printing managerial system according to claim 1 to 5, and is equipped with the data telecommunication line which connects mutually two or more clients which can become said computer apparatus of 1, the server equivalent to a computer apparatus besides the above, said client and server, and printer equipment.

[Claim 7] It is printing management equipment which manages the printing log about the print job which is generated by the computer apparatus of 1 and printed with printer equipment. A printing log receiving means to receive the printing log generated by said computer apparatus of 1 from the computer apparatus

concerned of 1, A status information acquisition means to acquire the status information about printing of said print job performed with this printer equipment accumulated by said printer equipment from printer equipment, Printing management equipment which merges the printing log which received with said printing log receiving means, and the status information acquired with said status information acquisition means, and is equipped with a \*\*\*\*\* merge means for the printing log for management.

[Claim 8] Said merge means is printing management equipment equipped with a matching means to aim at a response with said printing log and status information by using said job identification information as a key, including the job identification information from which it is printing management equipment according to claim 7, and said both printing logs and status information discriminate said print job.

[Claim 9] Said merge means is printing management equipment equipped with the data rewriting means which rewrites the content of said printing log based on said status information about the same kind concerned of data item when it is printing management equipment according to claim 7 or 8 and the data item of the same kind exists in said printing log and status information.

[Claim 10] The printing management equipment have an acquisition error-detection means are printing management equipment according to claim 7 to 9, and detect that an error occurred in acquisition of the status information by said status-information acquisition means, and an error-processing means set the printing log which forbade activation of said merge means and received by said printing log receiving means when generating of said error was detected by said acquisition error-detection means as the log for management.

[Claim 11] It is the printing management method which manages the printing log about the print job concerned when printing a print job from the computer apparatus of 1 to printer equipment with other computer apparatus. The processing performed by said computer apparatus of 1 (a) It has the step which generates the printing log about said print job, and the step which transmits the printing log which carried out the (b) aforementioned generation to a computer apparatus besides the above. It has the step which accumulates the status information about printing of said print job performed with the printer equipment concerned. the processing performed by said printer equipment -- (c) -- The processing performed by the computer apparatus besides the above (e) The step which receives the printing log sent from said computer apparatus of 1, (f) The step which acquires the status information accumulated by said step (c) from printer equipment, (g) Printing management method equipped with the step which merges the printing log which received by said step (e), and the status information acquired by said step (f), and generates the printing log for management.

[Claim 12] Said step (g) is a printing management method equipped with the step which aims at a response with said printing log and status information by using said (g1) job identification information as a key including the job identification information from which it is a printing management method according to claim 11, and said both printing logs and status information discriminate said print job.

[Claim 13] Said step (g) is a printing management method equipped with the step which rewrites the content of said printing log based on said status information about the same kind concerned of data item when it is a printing management method according to claim 11 or 12 and the data item of the same kind exists in said (g2) printing log and status information.

[Claim 14] The printing management method according to claim 13 characterized by providing the following said -- others -- the processing performed by the computer apparatus -- (h) -- the step which detects that the error occurred in acquisition of the status information by said step (f) (i) Step which determines the printing log which forbade activation of said step (g) and received by said step (e) when generating of said error was detected by said step (h) as the log for management

[Claim 15] It is a printing management method according to claim 11 to 14. Said

step (b) Whenever it creates one print job for said printer equipments, it is the configuration of transmitting the printing log about the print job concerned of 1. Said step (e) It is the printing management method which is the configuration that are the configuration of receiving said printing log to the timing to which a printing log is sent from said step (b), and said step (f) acquires said status information in order for every predetermined time per print job.

[Claim 16] It is the printing management method which manages the printing log about the print job which is generated by the computer apparatus of 1 and printed with printer equipment. (a) The step which receives the printing log generated by said computer apparatus of 1 from the computer apparatus concerned of 1, (b) The step which acquires the status information about printing of said print job performed with this printer equipment accumulated by said printer equipment from printer equipment, (c) Printing management method equipped with the step which merges the printing log which received by said step (a), and the status information acquired by said step (b), and generates the printing log for management.

[Claim 17] Said step (c) is a printing management method equipped with the step which aims at a response with said printing log and status information by using said (c1) job identification information as a key including the job identification information from which it is a printing management method according to claim 16, and said both printing logs and status information discriminate said print job.

[Claim 18] Said step (c) is a printing management method equipped with the step which rewrites the content of said printing log based on said status information about the same kind concerned of data item when it is a printing management method according to claim 16 or 17 and the data item of the same kind exists in said (c2) printing log and status information.

[Claim 19] a printing management method according to claim 18 -- it is -- (d) -- the printing management method equipped with the step which said step (c) forbids activation of processing by said step (c2) when generating of said error is detected by said step (d) while equipping acquisition of the status information by said step (b) with the step which detects that the error occurred.

[Claim 20] It is the computer program used in the printing management equipment which manages the printing log about the print job which is generated by the computer apparatus of 1 and printed with printer equipment. (a) The function to receive the printing log generated by said computer apparatus of 1 from the computer apparatus concerned of 1, (b) The function which acquires the status information about printing of said print job performed with this printer equipment accumulated by said printer equipment from printer equipment, (c) Computer program for making a computer realize the function which merges the printing log which received by said function (a), and the status information acquired by said step (b), and generates the printing log for management.

[Claim 21] The computer program for being a computer program according to claim 20, and making a computer realize the function corresponding to the step of each part of a printing management method according to claim 17 to 19.

[Claim 22] It is the record medium which recorded the computer program used in the printing management equipment which manages the printing log about the print job which is generated by the computer apparatus of 1 and printed with printer equipment and in which computer reading is possible. (a) The function to receive the printing log generated by said computer apparatus of 1 from the computer apparatus concerned of 1, (b) The function which acquires the status information about printing of said print job performed with this printer equipment accumulated by said printer equipment from printer equipment, (c) Record medium which recorded the computer program for making a computer realize the function which merges the printing log which received by said function (a), and the status information acquired by said step (b), and generates the printing log for management and in which computer reading is possible.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the technique of managing the printing log about the print job concerned when printing a print job from the computer apparatus of 1 to printer equipment with other computer apparatus.

[0002]

[Description of the Prior Art] In order to improve the operating ratio of a printer, connecting two or more computers (client computer) and printers with a computer network (it being hereafter called a network) is performed ordinarily. Setting in this configuration, placing the server for management on a network from before, and totaling and accumulating a printing log on this server, since there is a request of wanting to total and manage printing logs (activity record), such as printing number of sheets and a printing job name, about the print job from the client computer on a network was performed.

[0003] In the printing system equipped with the server for this management, the client computer generated the printing log about a print job, and it consisted of administrative servers so that that printing log might be received from a client and it might accumulate as a file.

[0004]

[Problem(s) to be Solved by the Invention] However, in the above-mentioned Prior art, there was a problem that the precision of a printing log was low. The printing log generated with a client computer grasps the content of printing directed to printer equipment from the client computer, and since it was not what reflects actual printing by the printer in accuracy, the problem that the precision of the above printing logs was low generated it.

[0005] This invention was made in view of the above-mentioned problem, and aims at enabling it to manage a printing log to high degree of accuracy.

[0006]

[The means for solving a technical problem, and its operation and effectiveness] The configuration shown below was taken as a means for solving a part of technical problem [ at least ] mentioned above.

[0007] The printing managerial system of this invention is a printing managerial system which manages the printing log about the print job concerned when printing a print job from the computer apparatus of 1 to printer equipment with other computer apparatus. A printing log generation means by which said computer apparatus of 1 generates the printing log about said print job, It has a printing log transmitting means to transmit said generated printing log to a computer apparatus besides the above. Said printer equipment It has a status information are recording means to accumulate the status information about printing of said print job performed with the printer equipment concerned. A computer apparatus besides the above A printing log receiving means to receive the printing log sent from said computer apparatus of 1, A status information acquisition means to acquire status information from the status information are recording means of said printer equipment, It is characterized by having a merge means to merge the printing log which received with said printing log receiving means, and the status information acquired with said status information acquisition means, and to generate the printing log for management.

[0008] According to the printing managerial system of the above-mentioned configuration (this configuration is hereafter called a basic configuration), the printing log obtained from the computer apparatus of 1 which outputted the print job to printer equipment, and the status information about printing actually performed with printer equipment are merged, and the printing log for management is generated. For this reason, the printing log obtained will become highly

precise from it becoming possible to make the condition of printing actually performed with printer equipment reflect in a printing log. Therefore, the effectiveness that a printing log is manageable to high degree of accuracy is done so.

[0009]In the printing managerial system of the above-mentioned basic configuration, said merge means can be considered as a configuration equipped with a matching means to aim at a response with said printing log and status information by using said job identification information as a key, including the job identification information from which said both printing logs and status information discriminate said print job.

[0010]According to this configuration, a response with a printing log and status information can be aimed at by using job identification information of a print job as a matching key. For this reason, matching becomes easy.

[0011]Moreover, in the printing managerial system of the above-mentioned basic configuration, said merge means can be considered as a configuration equipped with the data rewriting means which rewrites the content of said printing log based on said status information about the same kind concerned of data item, when the data item of the same kind exists in said printing log and status information.

[0012]According to this configuration, rather than the printing log obtained from the computer apparatus of 1 which outputted the print job, since the status information about printing obtained from printer equipment was preferentially employable, the condition of printing performed actually was certainly reflected in the printing log with printer equipment. Therefore, the effectiveness that a printing log is more manageable to high degree of accuracy is done so.

[0013]In the printing managerial system equipped with this data write-in means a computer apparatus besides the aboveWhen generating of said error is detected by an acquisition error detection means to detect that the error occurred in acquisition of the status information by said status information acquisition means, and said acquisition error detection meansIt can also consider as a configuration equipped with an error-processing means to determine the printing log which forbade activation of said merge means and received with said printing log receiving means as the log for management.

[0014]When acquiring the status information about printing from printer equipment normally goes wrong according to the above-mentioned configuration, this status information is not reflected in a printing log. Therefore, the printing log obtained will become highly precise.

[0015]In the printing managerial system of the above-mentioned basic configuration the printing log transmitting means of said computer apparatus of 1Whenever it creates one print job for said printer equipments, it is the configuration of transmitting the printing log about the print job concerned of 1. The printing log receiving means of a computer apparatus besides the aboveIt is the configuration of receiving said printing log to the timing to which a printing log is sent from said printing log transmitting means, and the status information acquisition means of a computer apparatus besides the above can be considered as the configuration which acquires said status information in order for every predetermined time per print job.

[0016]When the timing to which information is sent with said computer apparatus and printer equipment of 1 is different in other computer apparatus which manage a printing log according to the above-mentioned configuration, it becomes possible to incorporate both information certainly.

[0017]In the printing managerial system of the above-mentioned basic configuration, it can consider as a configuration equipped with the data telecommunication line which connects mutually two or more clients which can become said computer apparatus of 1, the server equivalent to a computer apparatus besides the above, said client and server, and printer equipment.

[0018]According to this configuration, it becomes possible to manage a printing log on the network which connected two or more clients, printer equipment, and servers by the data telecommunication line.

[0019]The printing management equipment of this invention is printing management equipment which manages the printing log about the print job which is generated by the computer apparatus of 1 and printed with printer equipment. A printing log receiving means to receive the printing log generated by said computer apparatus of 1 from the computer apparatus concerned of 1, A status information acquisition means to acquire the status information about printing of said print job performed with this printer equipment accumulated by said printer equipment from printer equipment, It is characterized by merging the printing log which received with said printing log receiving means, and the status information acquired with said status information acquisition means, and having a \*\*\*\*\* merge means for the printing log for management.

[0020]The printing management equipment of the above-mentioned configuration has the same operation and effectiveness as the printing managerial system of the above-mentioned invention, and can manage a printing log to high degree of accuracy.

[0021]The printing management method of this invention is a printing management method which manages the printing log about the print job concerned when printing a print job from the computer apparatus of 1 to printer equipment with other computer apparatus. The processing performed by said computer apparatus of 1(a) It has the step which generates the printing log about said print job, and the step which transmits the printing log which carried out the (b) aforementioned generation to a computer apparatus besides the above. It has the step which accumulates the status information about printing of said print job performed with the printer equipment concerned. the processing performed by said printer equipment -- (c) --The processing performed by the computer apparatus besides the above(e) The step which receives the printing log sent from said computer apparatus of 1, (f) The step which acquires the status information accumulated by said step (c) from printer equipment, (g) It is characterized by having the step which merges the printing log which received by said step (e), and the status information acquired by said step (f), and generates the printing log for management.

[0022]The printing management method of the above-mentioned configuration has the same operation and effectiveness as the printing managerial system of the above-mentioned invention, and can manage a printing log to high degree of accuracy.

[0023]The computer program of this invention is a computer program used in the printing management equipment which manages the printing log about the print job which is generated by the computer apparatus of 1 and printed with printer equipment. (a) The function to receive the printing log generated by said computer apparatus of 1 from the computer apparatus concerned of 1, (b) The function which acquires the status information about printing of said print job performed with this printer equipment accumulated by said printer equipment from printer equipment, (c) It is characterized by making a computer realize the function which merges the printing log which received by said function (a), and the status information acquired by said step (b), and generates the printing log for management.

[0024]The record medium of this invention is a record medium which recorded the computer program used in the printing management equipment which manages the printing log about the print job which is generated by the computer apparatus of 1 and printed with printer equipment and in which computer reading is possible. (a) The function to receive the printing log generated by said computer apparatus of 1 from the computer apparatus concerned of 1, (b) The function which acquires the status information about printing of said print job performed with this printer equipment accumulated by said printer equipment from printer equipment, (c) It is characterized by recording the computer program for making a computer realize the function which merges the printing log which received by said

function (a), and the status information acquired by said step (b), and generates the printing log for management.

[0025]The computer program and record medium of the above-mentioned configuration also have the same operation and effectiveness as the printing managerial system of the above-mentioned invention, or a printing management method, and a printing log can be managed to high degree of accuracy in printing management equipment.

[0026]

[Other modes of invention]This invention contains other following modes. That 1st mode is a mode as a data signal embodied in the subcarrier by the computer program of this invention being included. The 2nd mode is a mode as a program feeder which supplies a computer program through a communication path. In this 2nd mode, a computer program can be put on the server on a network etc., a required program can be downloaded to a computer through a communication path, and above-mentioned equipment and an above-mentioned approach can be realized by performing this.

[0027]

[Embodiment of the Invention]In order to clarify further the configuration and operation of this invention explained above, the gestalt of implementation of this invention is explained based on an example below.

[0028]1. The whole hardware block diagram 1 is a block diagram showing the outline configuration of the network system 10 which applies the 1st example of this invention. One set of one set of the client computers 20 and 30 of plurality (the example of a graphic display two sets) which generate a print job, and the network printer 40 which prints a print job, and the administrative server 50 which performs management of a printing log is mutually connected to the network system 10 of this 1st example through the network 60 built by the Local Area Network (LAN) so that it may illustrate. In addition, a network 60 can be changed to LAN and can be changed to the Internet, intranet, and various networks, such as a Wide Area Network (WAN). Here, a print job is the data aggregate showing the print of 1, and it consists of image data, control data, etc.

[0029]Drawing 2 is the block diagram showing the outline configuration of a client computer (it is only hereafter called a client) 20. In addition, other clients 30 are the same configurations. CRT display 21 and the keyboard 22 are connected to the client 20 so that it may illustrate. Moreover, the network control circuit 26 is carried in the client 20 with the hard disk drive (HDD) 23 and the CD drive 25 which reads the content of CD-ROM24. A client 20 is equipped with ROM28 and the RAM29 grade which were mutually connected by the bus focusing on CPU27 as arithmetic and program control.

[0030]CPU27 performs the application program stored in HDD23, a printer driver program, OS, a printing log acquisition program, etc., and performs control which stores required information, a file, etc. temporarily to RAM29 at program execution. The printing log acquisition program is beforehand stored in CD-ROM24, and this printing log acquisition program is transmitted to HDD23 through the CD drive 25.

[0031]In addition, a printing log acquisition program is good also as a configuration which changed to what was stored in CD-ROM24, and was stored in other pocket mold record media (portable mold record medium), such as a floppy disk, a magneto-optic disk, and an IC card. Moreover, this printing log acquisition program downloads the program data offered through a network, and can obtain them from the specific server connected to an external network (for example, Internet) by transmitting to HDD26.

[0032]Drawing 3 is the block diagram showing the outline configuration of the administrative server 50. Like a client 20, the administrative server 50 is equipped with CRT display 51, a keyboard 52, HDD53, the CD drive 55, and the network control circuit 56, and is further equipped with CPU57, ROM58, and RAM59 grade so that it may illustrate. CPU57 performs OS, a printing log tabulation program, etc. which are stored in HDD53, and performs control which stores required information, a file, etc. temporarily to RAM59 at program execution. The



printing log tabulation program is beforehand stored in CD-ROM54 in which the content is read by the CD drive 55, and this printing log tabulation program is transmitted to HDD53 through the CD drive 55.

[0033] In addition, a printing log tabulation program is good also as a configuration which changed to what was stored in CD-ROM54, and was stored in other pocket mold record media (portable mold record medium), such as a floppy disk, a magneto-optic disk, and an IC card. Moreover, this printing log tabulation program downloads the program data offered through a network, and can obtain them from the specific server connected to an external network (for example, Internet) by transmitting to HDD56.

[0034] A network printer 40 is the so-called laser beam printer which applies a laser beam to a photoconductor drum, makes a latent image, develops with a toner, and is imprinted in a form. This network printer 40 is equipped with CPU, ROM, RAM, etc. which are not illustrated, and has computer ability substantially. Moreover, a network printer 40 manages and holds MIB (Management Information Base) which accumulates the variable showing the condition of a self-opportunity. In addition, as a network printer 40, it can change to a laser beam printer and various printers, such as an ink jet printer and a thermal transfer printer, can be applied.

[0035] Drawing 4 is the block diagram showing the function realized by the client 20, the network printer 40, and the administrative server 50, respectively. In addition, each functional block to illustrate is built by software. Application 20A is stored in the client 20, and using application 20A, a user inputs data or creates data to print under the application concerned using the resource in a client so that it may illustrate. Print queue 20C for saving at the client and communications control section 20D for transmitting a print job to a network printer 40 through a network 60 are prepared in the client 20 until it finishes transmitting the data which printer driver 20B which receives data from application 20A and makes the print job for printers, and printer driver 20B make.

[0036] Furthermore, printing Monitoring Department 20E which resides in Windows (trademark) which is OS permanently, supervises a printing instruction to a client 20, and acquires the information concerning printing processing of Windows, Printing log generation section 20F which generate the printing log about the print job which chooses a predetermined thing from the printed information acquired by printing Monitoring Department 20E, and is transmitted from printer driver 20B, Printing log transmitting section 20G which transmit the printing log generated by printing log generation section 20F to the administrative server 50 through a network 60 are prepared.

[0037] A "document name", the information on the used application program or OS, the information set up by the property of a printer at the time of a printing instruction are included in the above-mentioned printing log. As information set up by the property of the above-mentioned printer, a "paper size", "number of copies", "page orientation", etc. correspond. A "document name" shows the identifier of the document which is the object for printing specified by the print job, a "paper size" shows the size of the form used for printing with the class of form, "number of copies" shows number of copies to print, and "page orientation" shows the direction where a form is set in the printer which prints.

[0038] Communications control section 40A for receiving a print job from a client 20, main processing section 40B which generates the output data for printing based on the print job, and output-data transmitting section 40C which transmits the output data from main processing section 40B to the print engine 42 are prepared in the network printer 40. The print engine 42 is hardware which receives the output data from the outside and realizes printing to a record form.

[0039] Furthermore, MIB control-section 40D and MIB40E are prepared in the network printer 40. MIB control-section 40D detects the condition of a network printer 40 from main processing section 40B, and writes in the variable which shows this

condition per job to MIB.

[0040]Printing log receive section 50A and MIB data acquisition section 50B are prepared in the administrative server 50. Printing log receive section 50A receives a printing log from a client 20. As a printing log, as mentioned above, the data in which a "document name", a "paper size", "number of copies", "page orientation", "the information on an application program", "the information on OS", etc. are shown are receivable.

[0041]MIB data acquisition section 50B acquires desired MIB data from MIB which communicates with a network printer 40 and is accumulated in a network printer 40. In addition, the acquired MIB data is stored in RAM59 as printing result information. This MIB data to acquire is data showing the ingredient actually spent on printing in the network printer 40, and, specifically, is data, such as "real printing number of sheets", a "real paper size", "printing initiation and end time", and "toner consumption."The data in which these contents are shown will be acquired as printing result information for every print job by printing result information acquisition section 50B. In addition, this MIB data acquisition section 50B has composition which acquires only the thing about the content updated henceforth, after aiming at acquisition of MIB data last time.

[0042]Furthermore, based on printing log registration section 50C which registers into the printing log file PLF the printing log which received by printing log receive section 50A, and the printing result information acquired by MIB data acquisition section 50B, printing log complement section 50D which complements the content of the printing log registered into the printing log file PLF is prepared in the administrative server 50.

[0043]Printing Monitoring Department 20E in a client 20, printing log generation section 20F, and printing log transmitting section 20G are built by software by the above-mentioned printing log acquisition program performed by CPU27 of a client 20. Each part 50A-50D in the administrative server 50 is built by software by the above-mentioned printing log tabulation program performed by CPU57 of the administrative server 50. Hereafter, a printing log acquisition program and a printing log tabulation program are explained to a detail. In addition, about the program which constitutes MIB control-section 40D in a network printer 40, since it is a well-known thing, detailed explanation is omitted here.

[0044]printing log generation section 20F -- the printing log generation means of this invention -- printing log transmitting section 20G -- the printing log transmitting means of this invention -- MIB control-section 40D -- the status-information acquisition means of this invention -- MIB40E -- the status-information are-recording means of this invention -- MIB data-acquisition section 50B realizes the status-information acquisition means of this invention, and, as for printing log complement section 50D, printing log receive section 50A has realized the merge means of this invention for the printing log receiving means of this invention, respectively.

[0045]Drawing 5 is a flow chart which shows the printing log generating routine described with the above-mentioned printing log generator performed by CPU27 of a client 20. This printing log generating routine monitors continuously that a printing instruction is published in Windows which is OS, and when a printing instruction is published, reading appearance of it is carried out. It is distinguished by issuance of the above-mentioned printing instruction that there was an output of a new print job. CPU27 of a client 20 will acquire the various information in connection with printing processing of Windows first, if processing of this printing log generating routine is started (step S110). Then, CPU27 chooses a predetermined thing from all the printed information acquired at step S110, and generates the printing log PL about the print job outputted from printer driver 20B (step S120).

[0046]Drawing 6 is the explanatory view showing the content of the printing log PL obtained as a result of step S120. In addition to the data d0 of "print job ID" which identifies a print job, the printing log PL is equipped with the data

d1, d2, d3, d4, and d5 of the "document name", a "paper size", "number of copies", "page orientation", "the information on an application program (for example, program name)", and "the information on OS (for example, OS name)" which were mentioned above, and d6 grade so that it may illustrate.

[0047]CPU27 performs processing which transmits the printing log PL generated at step S120 through a network 60 at the administrative server 50 to drawing 5 after activation of return and step S120 (step S130). Then, CPU27 advances processing to a "return" and once ends processing of this control routine.

[0048]Next, the above-mentioned printing log tabulation program performed by CPU57 of the administrative server 50 is explained. This program is divided into the main routine and subroutine of a printing log total in practice. Drawing 7 is a flow chart which shows the subroutine. This subroutine is repeatedly performed by every predetermined time (for example, 1 second). In addition, this predetermined time is set to the almost same time amount as the printing log generating routine performed by the client 20.

[0049]If processing is started, CPU57 of the administrative server 50 will perform processing which receives first the printing log PL sent through a network 60 from a client 20, so that it may illustrate (step S210). Subsequently, CPU57 registers the printing log PL which received into the printing log file PLF (step S220). By using the data of the above-mentioned printing log PL as one record, the printing log file PLF is DS equipped with two or more records, and is prepared on HDD53. From a client 20, since the printing log PL about the print job is sent whenever there is an output of a new print job in printer driver 20B, additional registration of the printing log PL about the new print job will be carried out by processing of steps S210 and S220 at the printing log file PLF. Then, it escapes from CPU57 for a "return", and it once ends processing of this subroutine.

[0050]Drawing 8 is a flow chart which shows the main routine of a printing log total. This main routine is repeatedly performed by every predetermined time (for example, 30 seconds). In addition, this predetermined time is set to long time amount compared with the above-mentioned subroutine.

[0051]It is not rich and CPU57 of the administrative server 50 performs processing which acquires the MIB data showing the ingredient with which processing is started, and which was actually spent on printing in the network printer 40 from MIB40E so that it may illustrate (step 240). Specifically as MIB data, the data in which "real printing number of sheets", a "real paper size", "printing initiation and end time", "toner consumption", etc. are shown correspond. Moreover, these MIB data also contain data, such as the "printing condition" etc. which shows whether "print job ID" which specifies a print job, and a print job are in which condition of the completion of printing current, printing waiting, and during printing. At step 240, these MIB data are minded for every print job, a network 60 is minded in order, and it acquires from MIB40E of a network printer 40. It is specifically starting the program of a well-known MIB module, and drawing reads desired MIB data for a network printer 40 and data communication by one print job.

[0052]Then, CPU57 performs processing which distinguishes whether 1 set of MIB data acquired at step S240 are the things about the print job which printing already completed (step S250). This distinction is performed based on the data in the "printing condition" of having mentioned above. Here, when it is distinguished that it is MIB data about the print job which printing completed, 1 set of the MIB data are additionally written in the predetermined field in RAM59 as printing result information PR (step S260). Then, processing is advanced to step S270. on the other hand, printing is not completed at step S250 -- namely, printing -- processing is advanced to step S270 as it is, without processing step S260, waiting or when it is distinguished that it is the printing job under printing.

[0053]Drawing 9 is the explanatory view showing the content of the printing result information PR acquired as a result of step S260. In addition to the data d10 in which print job ID which specifies a print job is shown, the printing

result information PR is equipped with the data d11, d12, d13, and d14 of the "printing condition", "real printing number of sheets", a "real paper size", "printing initiation and end time", and the "toner consumption" which were mentioned above, and d15 grade so that it may illustrate. Step 260 mentioned above is performing the writing as printing result information PR by writing in the file of the format which shows the MIB data acquired from the network printer 40 to this drawing 8 per print job. In addition, the record of 1 stored in this file is equivalent to the printing result information PR on 1.

[0054]At return and step S270, it distinguishes whether CPU57 is the last data with which the MIB data acquired at step S240 are obtained from a network printer 40 to drawing 8. Since it is the content updated henceforth after the MIB data obtained from a network printer 40 acquired MIB data last time, step S270 means distinguishing whether reception of all MIB data with updating was completed from the last time. At step S270, if it is not negative distinction, i.e., the last MIB data, and will be distinguished, CPU57 will receive the MIB data for one print job which returns processing to step S240 and follows it, and will repeat and perform step S250 thru/or processing of S270.

[0055]Processing is advanced to step S280 noting that acquisition of all MIB data is completed on the other hand, when it is distinguished at step S270 that it is affirmation distinction, i.e., the last MIB data. At step S280, the printing result information PR on 1 is first read from the predetermined field in RAM written in at step S260.

[0056]CPU57 performs processing which searches the printing log PL corresponding to the printing result information PR read at step S280 from the printing log file PLF after activation of step S280 (step S290). Specifically, a thing equipped with the data d0 of "print job ID" which is in agreement with this matching key about all the printing logs PL stored in the printing log file PLF is searched by using as a matching key the data d10 of "print job ID" which is the 1st data item of the printing result information PR. Subsequently, the printing log PL judged as a matching key being in agreement at step S290 is complemented with the content of the printing result information PR (what was read at step S280) (step S300).

[0057]Drawing 10 is the explanatory view showing signs that the printing log PL is complemented with the printing result information PR. Merge with the printing result information PR and the printing log PL is made by transmitting the content included in the printing result information PR to the printing log PL side so that it may illustrate, but when the data item of a content of the same kind exists in the printing log PL side like the data d2 of a "paper size" in this case, that content is rewritten by the data d12 of a corresponding data item, i.e., a "real paper size." In addition, when there is no data item of the same kind in the printing log PL side, the data d11, d13, and d14 by the side of the printing result information PR are added as data items d7, d8, and d9 as they are.

[0058]In addition, in this example, although only the data d2 of a "paper size" were shown as a data item of the content of the above-mentioned congener, although not clearly shown in the data item shown by drawing 10 besides this, it is in inside, for example, data, such as a color / monochrome printing, and both sides / one side printing, can also be considered as the configuration from which rewriting is made from the content of the printing result information PR.

[0059]CPU57 distinguishes whether the printing result information PR read at step S280 is the printing result information on the last of the inside stored at the above-mentioned predetermined field in RAM after activation of return and step S300 to drawing 8 (step S310). Here, if it is not the printing result information PR on negative distinction, i.e., the last, and will be distinguished, CPU57 will read into step S280 printing result information PR which returns processing and continues, and will repeat and perform step S290 thru/or processing of S310.

[0060]On the other hand, at step S310, if it is distinguished that it is the

printing result information PR on affirmation distinction, i.e., the last, the predetermined field which stored MIB data at step S260 is cleared (step S320), after that, it will escape for a "return" and this manipulation routine will once be ended.

[0061]The printing log file PLF on HDD53 updated by the main routine of this printing log total prints, or has composition which can be graph[ a total and ]-ized by another manipulation routine according to an application. Therefore, an operator is grasping the print situation for every printer and every category, and becomes possible [ aiming at the cutback of a printing cost ]. Moreover, it becomes possible to reduce useless expense by arranging a printer the optimal according to system operating status, and utilizing efficiently.

[0062]In this example constituted as mentioned above, the printing result information PR generated from the MIB data obtained from the printing log PL obtained from the client 20 of 1 which outputted the print job to the network printer 40, and the network printer 40 is merged, and the printing log for management is generated. For this reason, in addition to the information to which the user set this printing log using the printer driver, the condition of printing actually performed with the network printer 40 was reflected. Therefore, since a printing log will become highly precise, it does so the effectiveness that a printing log is manageable to high degree of accuracy.

[0063]Especially, in this example, since the content of the printing result information PR was preferentially adopted about that data item when the data item of the same kind existed in the printing result information PR acquired from the printing log PL obtained from the client 20, and the network printer 40, the condition of printing actually performed with the network printer 40 was reflected in the printing log by accuracy. Therefore, the effectiveness that a printing log is more manageable to high degree of accuracy is done so.

[0064]In this example, the administrative server 50 receives the printing log of 1 for every output of the print job of clients 20-1, and, on the other hand, receives the MIB data about the accumulated print job of plurality (it may be 1) from a network printer 40 to every predetermined time (30 seconds). And the administrative server 50 is the timing after receiving the MIB data, and is merging the printing log based on the printing result information generated from the MIB data.

[0065]For this reason, in the administrative server 50, when the timing to which information is sent with said client 20 and network printer 40 is different, it becomes possible to incorporate both information certainly.

[0066]The 2nd example of this invention is explained. As compared with the 1st example, the content of the main routine of the printing log total performed by the administrative server 50 is only different, and this 2nd example is the same about other software configurations and hardware configurations. Drawing 11 is a flow chart which shows the main routine of the printing log total in this 2nd example. This main routine is repeatedly performed by every predetermined time (for example, 30 seconds) like the 1st example.

[0067]Steps S240, S250, S260, S270, S280, S290, S300, and S310 in drawing 11 attached the same number from it being the same processing as the 1st example. The point which is different from the 1st example in the main routine of a printing log total of this 2nd example is first to have formed step S242 between step S240 and step S250. At this step S242, processing which distinguishes whether processing of the acquisition of MIB data performed at step S240 is normal or it is an error is performed. Here, when it is distinguished that it is normal, processing is advanced to step S250.

[0068]On the other hand, when it is distinguished at step S242 that it is an error, processing is advanced to step S244, and it is additionally written in the predetermined field in RAM29, using as the printing result information PR the code which shows the purport which is an error. This predetermined field is a field which added printing result information in the 1st example, and the purport

which is an error will be indicated by the printing result information PR on 1 as a result of step S244. It progresses to step S270 after activation of step S244.

[0069] Furthermore, the point which is different from the 1st example is to have formed step S282 between step S280 and step S290. At this step S282, processing which distinguishes whether the purport whose printing result information PR read at step S280 is an error is indicated is performed. Here, when it was not an error and is distinguished, processing is advanced to step S290.

[0070] Processing is advanced to step S310, without on the other hand, performing processing of the SUTESSU tetraethylpyrophosphates S290 and S300, when it is distinguished at step S282 that it is an error. Consequently, when the printing result information PR read at step S280 is an error, the printing log PL read by the subroutine of a printing log total will be defined as a printing log for management as it is.

[0071] In the 2nd example constituted as mentioned above, the effectiveness that a printing log is manageable to high degree of accuracy as well as the 1st example is done so. Especially, in this 2nd example, when acquiring the MIB data about printing from a network printer 40 normally goes wrong, this MIB data is not reflected in a printing log. Therefore, the printing log obtained will become highly precise.

[0072] Other operation gestalten of this invention are explained below. In the above-mentioned example, as printer equipment of this invention, although the network printer 40 was used, it can change to this and can also consider as the printer connected to another computer on a local. Moreover, it can change to a printer and can also apply to the equipment in which other printings of a copying machine, facsimile apparatus, etc. are possible.

[0073] Although the administrative server 50 consisted of said examples so that MIB data might be read from MIB40E of a network printer 40 using an MIB module, it can change to this and the administrative server 50 can also be considered as the configuration which acquires MIB data in the following procedures. That is, the administrative server 50 transmits the acquisition demand of MIB data to a network printer 40 first. The MIB data with which the acquisition demand is directed to the carrier beam network printer 40 by acquisition demand are read from MIB, and it considers as the configuration which transmits the MIB data to the administrative server 50 which is the transmitting origin of an acquisition demand. The administrative server 50 is receiving the MIB data sent, and acquires MIB data.

[0074] as mentioned above, although one example of this invention has been explained in full detail, this invention is not limited to such an example at all, and comes out not to mention the ability to carry out in the mode which becomes various in the range which does not deviate from the summary of this invention.

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#### DESCRIPTION OF DRAWINGS

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##### [Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing the outline configuration of the network system 10 which applies the 1st example of this invention.

[Drawing 2] It is the block diagram showing the outline configuration of a client 20.

[Drawing 3] It is the block diagram showing the outline configuration of the administrative server 50.

[Drawing 4] It is the block diagram showing the function realized by the client 20, the network printer 40, and the administrative server 50, respectively.

[Drawing 5] It is the flow chart which shows the printing log generating routine

performed by CPU27 of a client 20.

[Drawing 6] It is the explanatory view showing the content of the printing log PL obtained as a result of step S120.

[Drawing 7] It is the flow chart which shows the subroutine of the printing log total performed by CPU57 of the administrative server 50.

[Drawing 8] It is the flow chart which shows the main routine of the printing log total.

[Drawing 9] It is the explanatory view showing the content of the printing result information PR acquired as a result of step S260.

[Drawing 10] It is the explanatory view showing signs that the printing log PL is complemented with the printing result information PR.

[Drawing 11] It is the flow chart which shows the main routine of the printing log total in the 2nd example.

[Description of Notations]

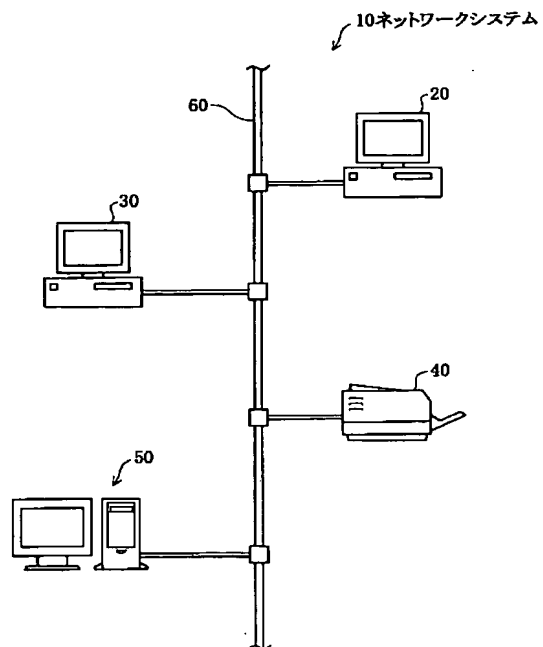
10 -- Network system  
 20 -- Client  
 20A -- Application  
 20B -- Printer driver  
 20C -- Print queue  
 20D -- Communications control section  
 20E -- Printing Monitoring Department  
 20F -- Printing log generation section  
 20G -- Printing log transmitting section  
 22 -- Keyboard  
 26 -- Network control circuit  
 27 -- CPU  
 28 -- ROM  
 29 -- RAM  
 30 -- Client  
 40 -- Network printer  
 40A -- Communications control section  
 40B -- Main processing section  
 40C -- Output-data transmitting section  
 42 -- Print engine  
 50 -- Administrative server  
 50A -- Printing log receive section  
 50B -- Printing result information acquisition section  
 50C -- Printing log registration section  
 50D -- Printing log complement section  
 52 -- Keyboard  
 56 -- Network control circuit  
 57 -- CPU  
 58 -- ROM  
 59 -- RAM  
 60 -- Network  
 PL -- Printing log  
 PLF -- Printing log file  
 PR -- Printing result information

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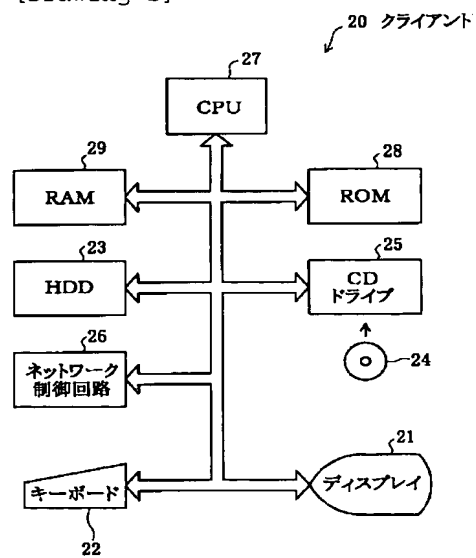
## DRAWINGS

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[Drawing 1]

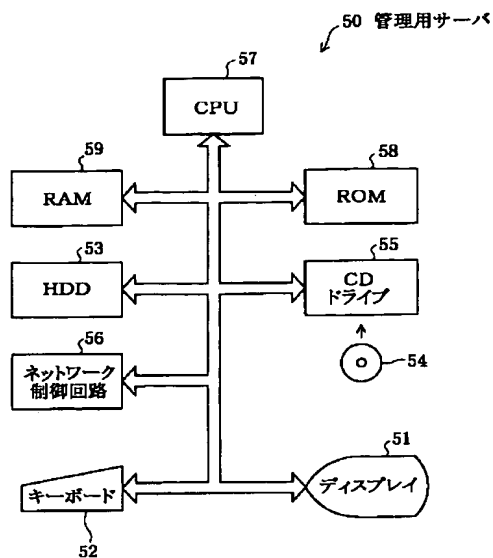


[Drawing 2]

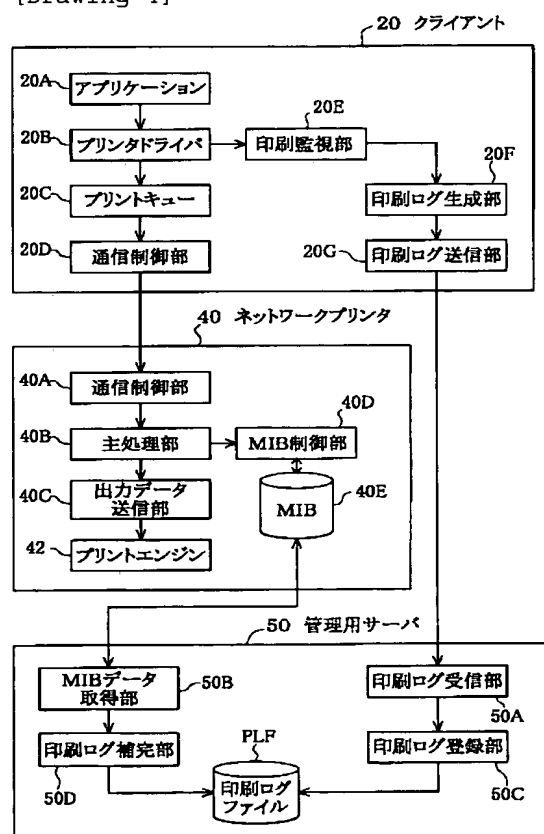


[Drawing 3]

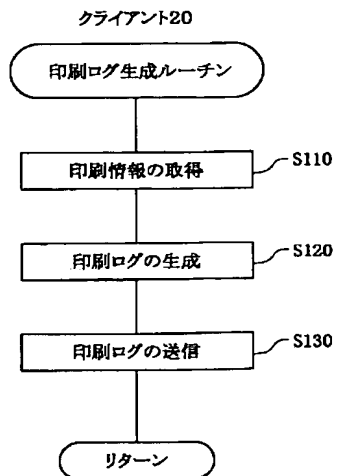




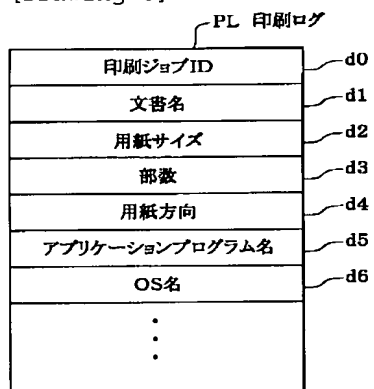
[Drawing 4]



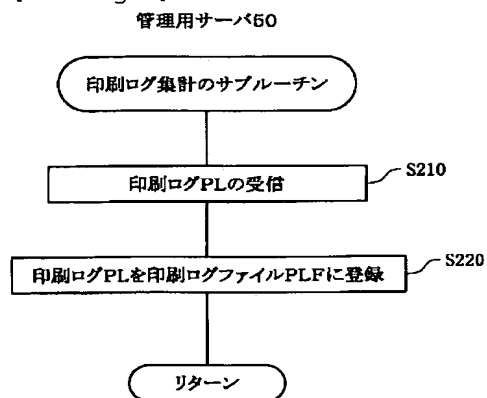
[Drawing 5]



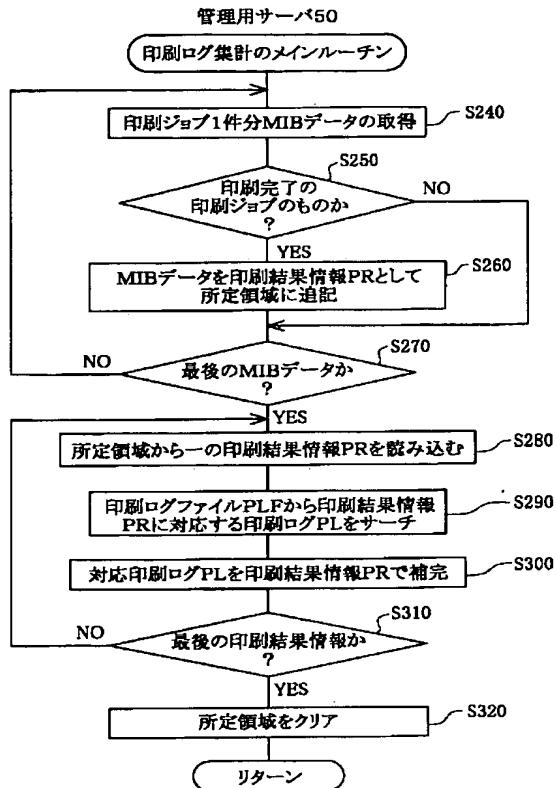
[Drawing 6]



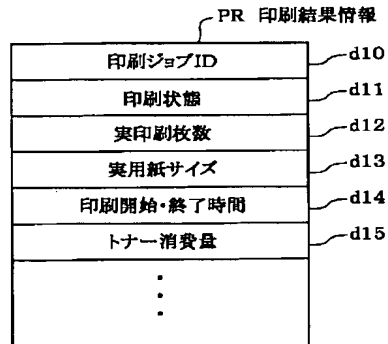
[Drawing 7]



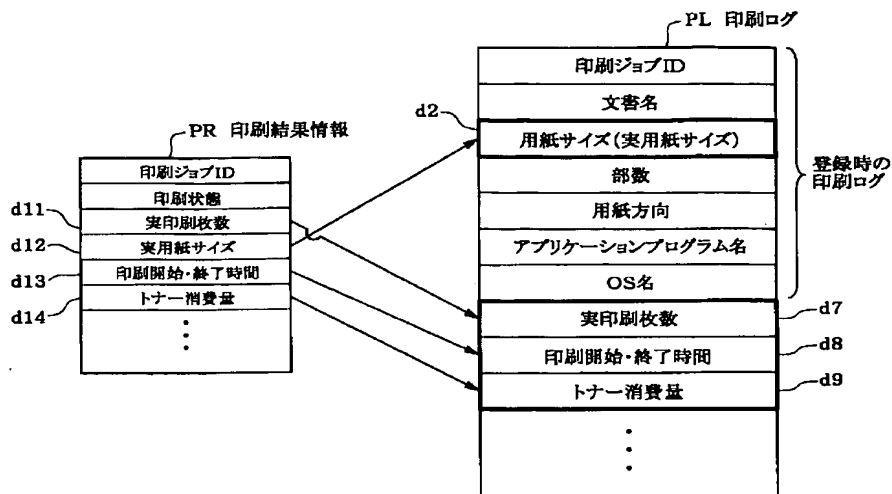
[Drawing 8]



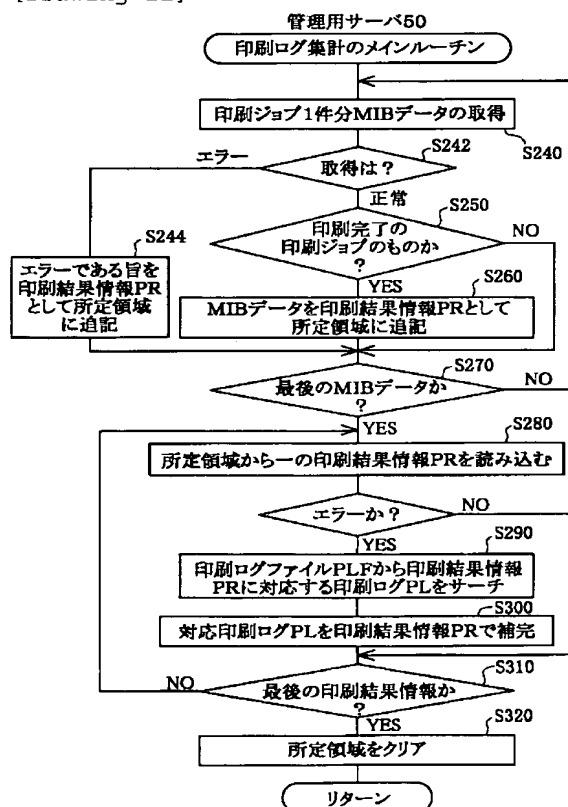
[Drawing 9]



[Drawing 10]



[Drawing 11]



(19)



JAPANESE PATENT OFFICE

## PATENT ABSTRACTS OF JAPAN

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 (54) **PRINTING MANAGEMENT SYSTEM FOR  
 MANAGING PRINTING LOG, METHOD FOR  
 MANAGING PRINTING AND COMPUTER  
 PROGRAM**

(57) Abstract:

PROBLEM TO BE SOLVED: To accurately manage printing logs.

SOLUTION: A managing server 50 receives a printing log from a client 20 in each output of a printing job and receives MIB(management information base) data for plural (or one) stored printing jobs from a network printer 40 at each prescribed time (30 sec). The server 50 generates a printing log file(PLF) by merging the printing log obtained from the client 20 and printing result information generated from the MIB data obtained from the network printer 40. Especially when an item of the same sort as the printing log is included in the printing result information, the PLF is generated by preferentially adopting the printing result information.

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